TRANSMITTAL SLIP DATE 3-22-71

TO: STAT

ROOM NO. BUILDING

REMARKS:
It is requested that the attached critique be filled out to the extent of your association with the Engineering Systems Analysis course and returned to this office by 2 April 1971.

Thank You,

FROM: STAT

ROOM NO. 606 BUILDING Ames

(47)

FORM NO. 241 1 FEB 55 REPLACES FORM 36-8 WHICH MAY BE USED.

TRANSMITTAL SLIP DATE

TO: STAT

ROOM NO. BUILDING

REMARKS:

Very interesting
Rating format

FROM: STAT

ROOM NO. EXTENSION

(47)

FORM NO. 241 1 FEB 55 REPLACES FORM 36-8 WHICH MAY BE USED.

check C

COURSE CRITIQUE

Please rate 1-10 (poor to excellent respectively) by placing a check on the scale given. Comment below question where indicated. Use back of pages if needed.

FORM

RATING

1. Format of the course was intended to accommodate to a rough 5% time commitment and to provide for a full-day class treatment of a particular topical area. Please rate:

1 day/month	1	✓	1
4 hours/every 2 weeks	1	✓	1

Other Alternatives:

2. The point of the applications session was to illustrate where current course material was utilized in the real world. Please rate effectiveness:

Material relevance	1	✓	1
Applications speakers	1	✓	1

3. The purpose of the homework was to exercise topical material with about 8 hours of work. Please rate these:

3 one-hour problems	1	✓	1
20 ten-minute problems	1	✓	

4. The goal of the intermediate 2-hour session was to give a "keep-alive" exercise in the topical area. Please rate these alternatives for continuity:

Problem-solving session	1	✓
Second applications session	1	✓

5. The class was intended to be weighted towards a blackboard-pictorial development in order to convey modelling concepts more readily. Please rate:

Diagrammatic presentation	1	✓ 10
Mix of vuegraphs & chalkboard	1	✓ 10

6. The symbology of various systems disciplines is confusing due to the separate source developments. An effort at consistency was made in order to permit cross interpretation within the technical literature. Please rate effectiveness:

Common symbology	1 ✓	10
Example illustrations	1 ✓	10

7. The intent of notes and handout material furnished throughout the month was to tie course topics to technical literature. Please rate:

Effectiveness of handout reprints	1 ✓	10
Effectiveness of specially developed handouts	1 ✓	10

8. General impedimenta such as same room same day/month, same format, etc., for providing continuity. Please rate:

Room	1	✓ 10
Day	1	✓ 10
Daily sequence	1	✓ 10

9. The course was designed to present a semi-unitary approach to several disciplines: Please rate applicable areas 1-10:

Communications	9	Optics	8	Acoustics	4
Hum. Eng. & Biomed.	6	Seismics	7	Pictorial	6
Computer Technology	5				

SUBSTANCE

RATING

10. The course material was split 50% basic math tools and 50% in commonality subsystems. (Those subsystems which are pervasive in designs across disciplines.) The sequence was that recommended by ASEE for math modelling related to several fields. Please rate:

Balance of material	1	10
Total content	1	10

The sequence is given below for each session. Please give your rating for both material content and for the applications given both formally and in the course of concept development.

11. Session I; Vectorial Representation; matrices, num. analysis, linear systems, sampling, manipulation

missed

Material	1	10
Application	1	10

12. Session II; Transforms; convolution, Fourier and Laplace transformations, Z transforms, impulse response, numerical analysis.

Material	1	10
Application	1	10

13. Session III; Probability and Statistics; random var., expectancy, density functions, distributions, confidence limits

Material	1	10
Application	1	10

14. Session IV; Stochastic Variable; stationarity, ergodicity, moments, correlation, power spectral density, white noise, square law detection.

Material	1	10
Application	1	10

15. Session V; Signal Detection; value, cost liklihood ratio detection, Bayes Law.

Material	1	10
Application	1	10

16. Session VI; Detector Subsystems I; receiver operating characteristics, detection situations, S/N ratio, data smoothing and prediction.

Material	1	10
Application	1	10

17. Session VII; Detector Subsystems II; non-white noise, whitening, matched filtering, threshold, detectability Markov chains.

Material	1	10
Application	1	10

18. Session VIII; Spatial Processing I; space-time relationships, spatial filtering, correlation matrix for signal and noise.

Material	1	10
Application	1	10

19. Session IX Spatial Processing II; optimum array, shading, optimum filtering, lobe periodicity.

Material	1	10
Application	1	10

did not attend major part of these sessions

20. Session X; Servomechanisms and Control; closed loop systems, regulation, feedback, root locus, stability criteria, bang-bang systems.

missed

Material	1	10
Application	1	10

21. Session XI; Modulation; analog modulation, AM, FM, PM, supressed band modulation, effects of index of modulation noise immunity.

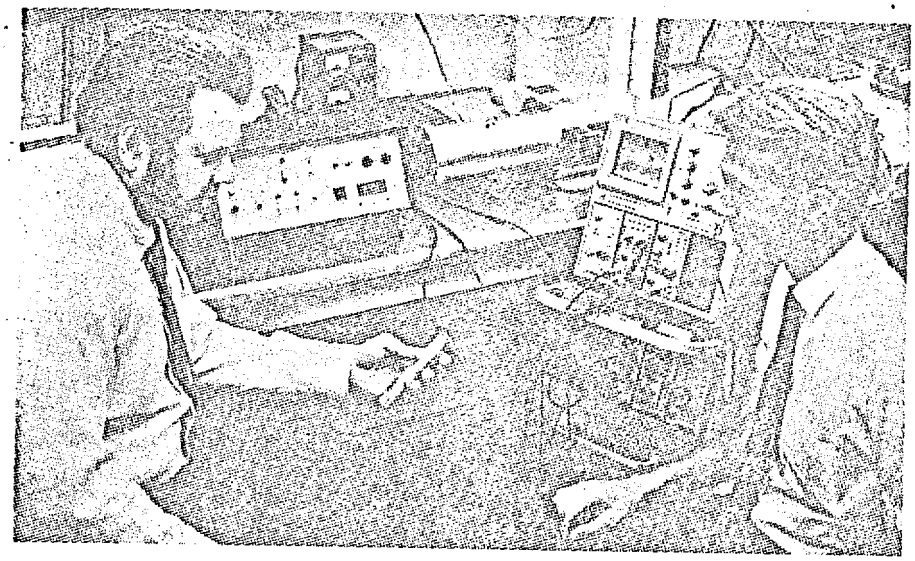
Material	1	✓	10
Application	1	✓	10

22. Session XII; Modulation; PPM, PWM, PCM, error correction codes, noise immunity, entropy. (Content Only)

missed

Material	1	10
Application	1	10

R/D new products



'Optical Multichannel Analyzer' uses electronic scanning

Later this month, SSR Instruments Co. of Santa Monica, California will introduce a new instrument that makes observation of spectra from 3500 to 11,000 angstroms in real time possible. Among possible applications are studies of flash photolysis, enzyme reaction rates, free radicals, temperature-jump phenomena, chromatographic peaks and nanosecond fluorescence. The unit is also adaptable to optical inputs other than spectra, such as from an ultracentrifuge or a deflected image converter.

In the picture above, consultant Henry Katzenstein (left) and engineer Gaylord Olson examine a silicon vidicon sensor used in the unit. Behind them is the developmental model of the instrument, with the sensor head attached to a 600-line per millimeter grating monochromator used to test the unit. Displayed on the oscilloscope behind Olson is a spectra from a helium-neon laser.

Analogous to a nuclear multichannel analyzer, the instrument provides 1024 channels with a capacity of 100,000 counts each. Half are used to accommodate chopping of the scan beam so that background-subtract and signal averaging can be performed. Actually, the number of usable channels is limited to 300 to 400 by the capability of the vidicon; each channel in the vidicon is equivalent to a 0.001-inch slit. With the monochromator used for testing, the channel width is equivalent to 0.8 angstrom; and a spectral range of 400 angstroms is covered at one monochromator setting.

The vidicon can be electronically scanned each 30 milliseconds and the spectra added to memory. A delay setting provides for increasing vidicon target integration by a factor of up to nine before readout to obtain the highest signal-to-noise ratio compatible with the resolution required. The same time, 30 milliseconds is required for block transfer of data from the memory to either a minicomputer or a time-share system for further analysis. Slow and fast analog and digital outputs allow spectra to be recorded on a strip chart or displayed on a cathode ray tube.

With the standard silicon vidicon sensor, the unit has excellent sensitivity in the near infrared, from 8000 to 11,000 angstroms, while covering the range from 0.35 to 1.1 microns. Other sensors will be available for other spectral regions.

The developers of the new instrument point out that they used EDP, not television, techniques in their approach. The result is an instrument that is expected to be priced at about $10,000. With an image intensifier replacing the vidicon, the price will rise to about $16,000.

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